

CLAIMS

(1) An electric power steering apparatus capable of outputting an assistive steering force by an electric motor,
5 the electric power steering apparatus comprising:

a housing;

a rack shaft including rack teeth and a screw part,
and being movable with respect to the housing;

a pinion including pinion teeth meshing with the rack
10 teeth, for transmitting a steering force from a steering
wheel to the rack shaft;

a supporting unit disposed in the housing, for
supporting the rack shaft; and

a converting member for converting a rotational force
15 of the electric motor into a thrust of the rack shaft using
a nut screwed on the screw part,

wherein the rack shaft has guideway surfaces extending
in the longitudinal direction for the supporting unit at
least at two places on the periphery,

20 the supporting unit includes a rolling member rolling
while pressing each supporting unit guideway surface along
the direction intersecting with each other when viewed in
the longitudinal direction of the rack shaft, and when
indicating each direction of the pressing forces from the
25 rolling member to each supporting unit guideway surface by
a line, respectively, the intersecting point of the lines
is shifted from the center of the rack shaft.

(2) An electric power steering apparatus capable of outputting an assistive steering force by an electric motor, the electric power steering apparatus comprising:

5 a housing;

 a rack shaft including rack teeth, and being movable with respect to the housing;

 a pinion including pinion teeth meshing with the rack teeth, for transmitting a steering force from a steering
10 wheel to the rack shaft; and

 a supporting unit disposed in the housing, for supporting the rack shaft,

 wherein the rack shaft has guideway surfaces extending in the longitudinal direction for the supporting unit at
15 least at two places on the periphery,

 the supporting unit includes a rolling member rolling while pressing each supporting unit guideway surface along the direction intersecting with each other when viewed in the longitudinal direction of the rack shaft, a shaft member
20 having one end swingably held with respect to the housing and rotatably supporting the rolling member, and an urging means for pressing the rolling member toward the supporting unit guideway surface of the rack shaft by urging the other end of the shaft member.

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(3) The electric power steering apparatus according to claim 2, wherein the urging means comprises a pressing part for

contacting the other end of each shaft member and an elastic member for elastically urging the pressing part.

5 (4) The electric power steering apparatus according to claim 2 or claim 3, wherein when indicating each direction of the pressing forces from the rolling member to each supporting unit guideway surface by a line, respectively, the intersecting point of the lines is shifted from the center of the rack shaft.

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(5) The electric power steering apparatus according to any one of claims 1 to 4, wherein the rack shaft has a position-regulating part for regulating a position of the rolling member.

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(6) The electric power steering apparatus according to any one of claims 1 to 5, wherein a conical face facing outward is formed at least at one end face of the rolling member.

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(7) The electric power steering apparatus according to any one of claims 1 to 6, wherein at least a portion for supporting the rolling member, of the supporting unit, is formed by a molding process.